DPM 957-1

CAUSTIC SODA - Liquid

Electro Chemicals Division
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214/659-7000

Diamond Shamrock

Material Safety Data Sheet

GENERAL INFORMATION
Liquid Caustic Soda is a clear, corrosive liquid with no distinct odor.

Slightly Reactive — 1
Nonflammable — 0
Highly Hazardous — 3

Ratings based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974)

340B

I PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: DIAMOND SHAMROCK CORPORATION	REGULAR TELEPHONE NO. Contact Local Sales Office EMERGENCY TELEPHONE NO. 216-357-7070
ADDRESS: Divisional Technical Center, P. O. Box 191, Painesville, Ohio 44077	
TRADE NAME: CAUSTIC SODA - Liquid	
SYNONYMS: Sodium Hydroxide; NaOH	

II HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	HAZARD DATA
SODIUM HYDROXIDE	50	PEL* = 2.0 mg/m³ for 15 minutes
*OSHA Permissible Exposure Limit (PEL)		

III PHYSICAL DATA

BOILING POINT, 760 MM HG: 143°C		MELTING POINT	FREEZING POINT: 12.1°C (54°F)
SPECIFIC GRAVITY (H_2O=1): 1.54 @ 15.6°C		VAPOR PRESSURE: 13 mm Hg @ 60°C	
VAPOR DENSITY (AIR=1): Not applicable		SOLUBILITY IN H_2O, % BY WT.: Completely soluble	
% VOLATILES BY VOL.: Not volatile		EVAPORATION RATE (BUTYL ACETATE=1): Does not apply	
APPEARANCE AND ODOR: Clear - no odor			
pH: 7.5% solution has pH 14			

EC-LC-6c

IV FIRE AND EXPLOSION DATA

FLASH POINT (TEST METHOD)	AUTOIGNITION TEMPERATURE
None	Nonflammable

FLAMMABLE LIMITS IN AIR, % BY VOL	LOWER	UPPER
	Nonflammable	Nonflammable

EXTINGUISHING MEDIA

Use carbon dioxide, "alcohol" foam or dry chemicals in areas where caustic soda is stored. Caustic soda is nonflammable.

SPECIAL FIRE FIGHTING PROCEDURES

Pressure-demand, self-contained respiratory protection and protective clothing should be worn by firefighters in areas where caustic soda is stored. Caustic soda is nonflammable.

UNUSUAL FIRE AND EXPLOSION HAZARD

None

V HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA PEL = 2.0 mg/m³ for 15 minutes. Acute LC_{50} > 0.018 <0.20 mg/L;
Acute LD_{50} = 140-340 mg/kg (oral - rat)
Acute LD_{50} = 1,350 mg/kg (dermal - rabbit)

ROUTES OF EXPOSURE

Caustic soda is a corrosive material.

INHALATION

Airborne concentrations of dust, mist, or spray of caustic soda may cause damage to the upper respiratory tract and even to the lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure.

SKIN CONTACT

Caustic soda is destructive to tissues contacted and produces severe burns.

SKIN ABSORPTION

See "Skin Contact" above.

EYE CONTACT

Caustic soda is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

INGESTION

Caustic soda can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach if swallowed.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE

Burns: resulting in frequently deep ulceration and ultimate scarring.

CHRONIC OVEREXPOSURE

The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of spray or mist may result in varying degrees of irritation or damage to the respiratory tract tissues.

EMERGENCY AND FIRST AID PROCEDURES **Object is to Seek Medical Attention Immediately.**

EYES Immediately flush eyes with large amounts of water for at least 15 minutes holding eyelids apart to ensure flushing of the entire eye surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN Immediately wash contaminated skin with plenty of water. This may be followed with a rinse with vinegar or dilute acetic acid (3% solution) if available. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. Seek medical attention immediately.

INHALATION

Get person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if readily available. Seek medical attention immediately.

INGESTION

If swallowed, DO NOT induce vomiting. Give large quantities of water. If available, give several glasses of milk. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

NOTES TO PHYSICIAN

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VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Under normal use conditions, caustic soda is stable.

INCOMPATIBILITY

When handling caustic soda, avoid contact with aluminum, leather, wool, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction.

HAZARDOUS DECOMPOSITION PRODUCTS

None

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

None

VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Stop leaks. Contain spill. Remove as much as possible (e.g., shovel up or remove by vacuum truck, if liquid). Neutralize remaining traces of material with dilute acid; then flush area with water followed by liberal covering of sodium bicarbonate. Reuse spilled material, if possible, otherwise place in a closed, labeled container, and store in a safe place to await proper disposal. Persons performing this work should wear adequate personal protective equipment and clothing. **Caution**: Caustic soda may react violently with acids and water.

NEUTRALIZING CHEMICALS

Neutralize with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, and acetic acid.

WASTE DISPOSAL METHOD

Dispose in accordance with all federal, state and local regulations concerning health and pollution. Dispose via approved chemical waste disposal method, if regulations permit.

VIII INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS

Good industrial hygiene practice dictates that the work area should be isolated and contained, and provided with adequate local exhaust ventilation or other controls to maintain the air concentration of caustic soda below 2.0 mg/m^3 as required by OSHA. Air concentration of carbon monoxide formed by reaction of caustic soda and reducing sugars should not exceed 50 ppm for an eight (8) hour TWA.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY (SPECIFY IN DETAIL)

Use NIOSH-approved respirator for dusts and mists. Use air purifying respirator where caustic soda is in contact with reducing sugars.

EYE

Chemical splash goggles and face shield should be worn when working with or around caustic soda.

GLOVES

Gloves coated with rubber, synthetic elastomers, PVC, or other plastic should be worn when handling caustic soda to minimize skin contact.

OTHER CLOTHING AND EQUIPMENT

Hard hats, safety shoes, and rubber boots should be worn along with rubber apron when handling caustic soda. Safety showers and eyewash stations should be provided in all areas in which caustic soda is handled.

IX SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS

DANGER!

Causes Severe Burns to Skin and Eyes

Do NOT get in eyes, on skin, on clothing.
Avoid breathing dust, mist, or spray.
Do NOT take internally.
Use with adequate ventilation and employ respiratory protection when exposed to dust, mist or spray.
When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.
Wash thoroughly after handling.
Avoid contact with strong acids to prevent violent or explosive reactions.
Keep container closed.
Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977).

First Aid:

In case of contact:

For eyes: Immediately flush with plenty of water for at least 15 minutes holding eyelids apart to ensure flushing of the entire eye surface. **Seek medical attention immediately.**

Skin: Immediately wash with plenty of water. If available, rinse with vinegar or dilute acetic acid (3% solution). Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. **Seek medical attention immediately.**

Inhalation: Remove person from contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered if readily available. **Seek medical attention immediately.**

Ingestion: If swallowed, DO NOT induce vomiting. Give large quantities of water. If available, give several glasses of milk. NEVER give anything by mouth to an unconscious person. **Seek medical attention immediately.**

Special instructions for dissolving caustic soda:

When making solution, **always** add slowly to liquid surface with constant stirring. **Never add the liquid to the caustic soda.**

Always start with lukewarm liquid (80°-100°F.) **Never** start with hot or cold liquid.

If caustic soda becomes concentrated in one area, or if added too rapidly, or if added to hot or cold liquid, a rapid temperature increase can result in **DANGEROUS** boiling and/or spattering which may cause an immediate **VIOLENT ERUPTION.**

Spill or Leak: Leaks should be stopped. Spills, after containment, should be shoveled up and removed to chemical waste area or removed by vacuum truck, if liquid. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water according to Federal, State and Local regulations.

For Industrial Use Only

OTHER HANDLING AND STORAGE REQUIREMENTS

Caustic soda is classified by DOT as a corrosive material.

Considerable heat is generated when water is added to caustic soda; therefore, when making solutions **always** add the caustic soda to the water with constant stirring. The water should always be lukewarm (80°-100°F) **Never** start with hot or cold water. If caustic soda becomes concentrated in one area, or if added too rapidly, or if added to hot or cold water, a rapid temperature increase can result in DANGEROUS BOILING and/or spattering or may cause an immediate VIOLENT ERUPTION. Caustic soda can react violently or explosively with acids and many organic chemicals.

Caustic soda reacts with reducing sugars such as fructose, lactose, maltose, galactose, levulose and arabinose to form carbon monoxide. While the potential for worker exposure to carbon monoxide may be small, a potential does exist during cleaning of certain dairy and possibly other industry equipment.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

More information on the hazards and handling of caustic soda appear in Diamond Shamrock Corporation's Caustic Soda Handbook EC-LDC-1c.

DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME: Caustic Soda, Liquid
HAZARD CLASS: Corrosive Material
I.D. NO.: UN 1824
HAZARD SUBSTANCE: RQ-1000

PREPARED BY Diamond Shamrock Corporation
Technical Service Group

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